Notice of Allowability	Application No.	Applicant(s)	
	10/629,762	SUGANUMA, ATSUSHI	
	Examiner	Art Unit	
	An H. Do	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *30 July 2003*.

2. ☒ The allowed claim(s) is/are *1-14*.

3. ☐ The drawings filed on _____ are accepted by the Examiner.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 11/7&12/8/03&5/4/4
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Stephen D. Meier
Primary Examiner

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted on 07 November 2003, 18 December 2003 and 04 May 2004 were filed and are being considered by the examiner.

EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

4. Authorization for this examiner's amendment was given in a telephone interview with Ms. Tracy Johnson (Attorney's Secretary) on 26 January 2005.

The application has been amended as follows:

-Insert --PRIOR ART-- for Figures 21 and 22.

Allowable Subject Matter

5. Claims 1-14 are allowed.

Reasons for Allowance

6. The primary reason for the allowance of claims 1-3 is the inclusion of the limitations of an electrostatic ejection type ink jet head that includes ink guides passed through the through holes established in the insulating substrate, tip portion of the ink guides are protruded above a surface of the insulating substrate on a recording medium side, the first drive electrodes are arranged closer to the insulating substrate side than the flow path of the ink, and the second drive electrode is arranged closer to the head substrate side than the first drive electrodes, and at the time of recording of the image, ejection/non-ejection of the ink is controlled by biasing the second drive electrode to a predetermined voltage level having the same polarity as the fine particle component contained in the ink and switching the first drive electrodes between a high-impedance state and a ground level in accordance with the image data. It is these limitations found in the claims, as they are claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

7. The primary reason for the allowance of claims 4 and 5 is the inclusion of the limitations of an electrostatic ejection type ink jet head that includes ink guides passed through the through holes established in the insulating substrate, tip portion of the ink guides are protruded above a surface of the insulating substrate on a recording medium side, the first drive electrodes are arranged closer to the insulating substrate side than the flow path of the ink, the second drive electrodes are arranged closer to the head substrate than the first drive electrodes, the first drive electrodes on each line of the

plurality of individual electrodes arranged in the first direction are connected mutually, and the second drive electrodes on each line of the plurality of individual electrodes arranged in the second direction are connected mutually, and wherein the ejection/non-ejection of the ink at the time of recording of the image is controlled by sequentially repeating one of an operation (i) in which the second drive electrodes on all lines of the individual electrodes in the second direction are set to a high voltage level or a ground level in accordance with the image data under a state where the first drive electrodes on one line of the individual electrodes in the first direction are set under a high-impedance state and the first drive electrodes on all remaining lines of the individual electrodes in the first direction are set to a ground level while sequentially changing the first drive electrodes on the line of the individual electrodes in the first direction that are set under the high-impedance state, and an operation (ii) in which the first drive electrodes on all lines of the individual electrodes in the first direction are set to a high-voltage level or the ground level in accordance with the image data under a state where the second drive electrodes on one line of the individual electrodes in the second direction are set under the high-impedance state and the second drive electrodes on all remaining lines of the individual electrodes in the second direction are set to the ground level while sequentially changing the second drive electrodes on the line of the individual electrodes in the second direction that are set under the high-impedance state. It is these limitations found in the claims, as they are claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

8. The primary reason for the allowance of claims 6-8 is the inclusion of the limitations of an electrostatic ejection type ink jet head that includes ink guides passed through the through holes established in the insulating substrate, tip portion of the ink guides are protruded above a surface of the insulating substrate on a recording medium side, the first drive electrodes are arranged closer to the insulating substrate than the flow path of the ink, the second drive electrodes are arranged closer to the head substrate side than the first drive electrodes, the first drive electrodes on each line of the plurality of individual electrodes arranged in the first direction are connected mutually, and the second drive electrodes on each line of the plurality of individual electrodes arranged in the second direction are connected mutually, and ejection/non-ejection of the ink at the time of recording of the image is controlled by sequentially repeating one of an operation (i) in which the second drive electrodes on all lines of the individual electrodes in the second direction are turned on or off in accordance with the image data under a state where the first drive electrodes on one line of the individual electrodes in the first direction are turned on and the first drive electrodes on all remaining lines of the individual electrodes in the first direction are turned off while sequentially changing the first drive electrodes on the line of the individual electrodes in the first direction that are turned on, and an operation (ii) in which the first drive electrodes on all lines of the individual electrodes in the first direction are turned on or off in accordance with the image data under a state where the second drive electrodes on one line of the individual electrodes in the second direction are turned on and the second drive electrodes on all remaining lines of the individual electrodes in the second

direction are turned off while sequentially changing the second drive electrodes on the line of the individual electrodes in the second direction that are turned on, with the operation (i) being performed under a state where the individual electrodes are arranged so that the number of lines of the individual electrodes in the second direction is larger than the number of lines thereof in the first direction and the operation (ii) being performed under a state where the individual electrodes are arranged so that the number of lines in the first direction is larger than a number of lines in the second direction. It is these limitations found in the claims, as they are claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

9. The primary reason for the allowance of claims 9-11 is the inclusion of the limitations of an electrostatic ejection type ink jet head that includes ink guides passed through the through holes established in the insulating substrate, tip portion of the ink guides are protruded above a surface of the insulating substrate on a recording medium side, the first drive electrodes are arranged closer to the insulating substrate than the flow path of the ink, the second drive electrodes are arranged closer to the head substrate side than the first drive electrodes, the first drive electrodes on each line of the plurality of individual electrodes arranged in the first direction are connected mutually, the second drive electrodes on the line of the plurality of individual electrodes arranged in the second direction are connected mutually, and the lines of the individual electrodes in the first direction are divided into a plurality of groups that each group contains at least one line, and ejection/non-ejection of the ink at the time of recording of the image

is controlled by simultaneously for the plurality of groups and sequentially repeating one of an operation (i) in which the second drive electrodes on all lines of the individual electrodes in the second direction are turned on or off in accordance with the image data under a state where the first drive electrodes on one line of the individual electrodes in the first direction are turned on and the first drive electrodes on all remaining lines of the individual electrodes in the first direction are turned off while sequentially changing the first drive electrodes on the line of the individual electrodes in the first direction that are turned on, and an operation (ii) in which the first drive electrodes on all lines of the individual electrodes in the first direction are turned on or off in accordance with the image data under a state where the second drive electrodes on one line of the individual electrodes in the second direction are turned on and the second drive electrodes on all remaining lines of the individual electrodes in the second direction are turned off while sequentially changing the second drive electrodes on the line of the individual electrodes in the second direction that are turned on. It is these limitations found in the claims, as they are claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

10. The primary reason for the allowance of claims 12-14 is the inclusion of the limitations of an electrostatic ejection type ink jet head that includes an ink guide arranged on the head substrate so that tip portion thereof protrudes from a through hole established in the insulating substrate, and guides the ink flowing through the ink flow path from the ink flow path to the tip portion; and a drive electrode provided for a part of

an inner wall of the ink flow path side of the insulating substrate in proximity to the ink guide so as to surround a periphery of the ink guide, and is used to eject the ink guided to the tip portion of the ink guide by means of the electrostatic force. It is these limitations found in the claims, as they are claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Murakami et al (US 6,158,844) and Nakamoto et al (US 6,092,889) disclose an electrostatic print head having electrodes on support substrate and an ink guide is provided. Hotomi et al (US 5,144,340) disclose an inkjet printhead having an electric field curtain force to act on inking material located at the vicinity of the nozzle. Ebi et al (US 4,504,844) disclose an ink ejection head of the printer having control electrodes disposed in at least one ink passageway.

Contact Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143. The examiner can normally be reached on Monday-Friday (Flexible).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AD
January 26, 2005

Stephen D. Meier
Primary Examiner